

WHAT IS CLAIMED IS:

1. A thin film transistor array panel comprising:
an insulating substrate;
a gate wire formed on the substrate and including a gate line and a gate
5 electrode connected to the gate line;
a gate insulating layer formed on the gate line;
a semiconductor layer formed on the gate insulating layer;
a data wire formed on the semiconductor layer and including a data line
intersecting the gate line, a source electrode connected to the data line, and a
10 drain electrode located opposite the source electrode with respect to the gate
electrode;
a pixel electrode connected to the drain electrode; and
an etching assistant pattern located out of an area defined by
intersections of the gate line and the data line.
- 15 2. The thin film transistor array panel of claim 1, wherein the data
wire comprises a lower film of Cr, Mo or Mo ally and an upper film of Al or Al
ally.
3. The thin film transistor array panel of claim 2, further
comprising a passivation layer disposed between the data wire and the pixel
20 electrode.
4. The thin film transistor array panel of claim 3, wherein the
semiconductor layer has substantially the same planar shape as the data wire
except for a channel portion located between the data line and the drain electrode.
5. A method of manufacturing a thin film transistor array panel, the
25 method comprising:
forming a gate wire including a gate line and a gate electrode on a
substrate;
forming a gate insulating layer on the substrate;
forming a semiconductor pattern and an etching assistant pattern on the
30 gate insulating layer;

forming a source/drain conductor pattern and an etching assistant layer on the semiconductor pattern and the etching assistant pattern;

forming a data wire including a data line and source and drain electrodes separated from each other by removing the etching assistant layer and partly removing the source/drain conductor pattern; and
5 forming a pixel electrode connected to the drain electrodes.

6. The method of claim 5, wherein the separation of the source and the drain electrodes are performed by using a photo-etching process using a photoresist pattern, and the photoresist pattern comprises a first portion
10 disposed on an etching assistant portion and having a first thickness, a second portion having a second thickness larger than the first thickness, and a third portion disposed at positions except for the first and the second portions and having a thickness smaller than the first thickness.

7. The method of claim 6, wherein a mask used for the photo-etching process comprises a first portion partly transmitting light, a second
15 portion fully transmitting light, and a third portion fully blocking light, and the first, the second and the third portions of the mask is aligned to face the first, the second and the third portions of the photoresist pattern, respectively, during light exposure.

8. The method of claim 6, further comprising:
20 forming a contact pattern between the data wire and the semiconductor pattern, wherein the data wire, the contact pattern, the semiconductor pattern, and the etching assistant pattern are formed by using a mask.

9. The method of claim 8, wherein the formation of the gate
25 insulating layer, the semiconductor pattern, the contact pattern, and the data wire comprises:

depositing the gate insulating layer, a semiconductor layer, a contact layer, and a conductive layer;
coating a photoresist film on the conductive layer;
30 exposing the photoresist film through the mask;

developing the photoresist film to form the photoresist pattern such that the second portion of the photoresist pattern is disposed on the data wire;

forming the data wire, the contact pattern, and the semiconductor pattern respectively made of the conductive layer, the contact layer and the semiconductor layer by removing a portion of the conductive layer under the third portion, the semiconductor layer and the contact layer thereunder, the first portion, the conductive layer and the ohmic contact layer under the first portion, and a partial thickness of the second portion; and

removing the photoresist pattern.

10 10. The method of claim 9, wherein the formation of the data wire, the contact pattern, the semiconductor pattern, and the etching assistant pattern comprises:

removing the portion of the conductive layer under the third portion by dry etching or wet etching to form the source/drain conductor pattern and the etching assistant layer;

etching the contact layer under the third portion, the semiconductor layer thereunder to complete the semiconductor pattern and the etching assistant pattern under the first and the second portions; and

removing the source/drain conductor pattern and the etching assistant layer to complete the data wire and the contact pattern.

11. The method of claim 10; wherein the data wire comprises a lower film including Cr, Mo or Mo alloy and an upper film including Al or Al alloy.

12. The method of claim 11, wherein the upper film and the lower film are patterned by wet etching.